Original Research

Effect of Different Disinfecting Agents on Dental Impressions Contaminated with *Candida albicans*

Masoumeh Aslanimehr[1], Fatemeh Gholami[2], Siavash Torbati[3], Shima Aalaei[4]

[1]Department of Microbiology, Medical Microbiology Research Center, Qazvin University of Medical Sciences, Qazvin, Iran, [2]Department of Prosthodontics, Faculty of Dentistry, Qazvin University of Medical Sciences, Qazvin, Iran, [3]Student Research Committee, Qazvin University of Medical Sciences, Qazvin, Iran, [4]Department of Prosthodontics, Dental Caries Prevention Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

Abstract

Introduction: This research was carried out to compare the effects of 0.525% and 5.25% NaOCl, 2% H_2O_2, and 16-mg/mL propolis on additional silicone impression materials contaminated with *Candida albicans* at 5- and 10-minute exposure times, to evaluate the hypotheses of this study that propolis can be used for disinfecting of dental impressions. **Materials and methods:** A total of 122 silicone impressions were prepared. Two samples were considered the negative controls, and the rest were contaminated with *C. albicans* fungal species and disinfected with 0.525% NaOCl, 5.25% NaOCl, 2% H_2O_2, 16-mg/mL propolis, and 96% ethyl alcohol for 5 and 10 minutes (10 samples for each interval in each group). The data were analyzed with Kruskal–Wallis and Mann–Whitney *U* tests in all the groups at 5- and 10-minute intervals. **Results:** All the disinfecting agents significantly decreased *C. albicans* colony counts at both intervals compared to the control groups ($P = 0.00$). The differences in the disinfecting effects were significant between the four study groups ($P = 0.00$). The most significant effects were related to NaOCl at both intervals and concentrations and 2% H_2O_2 at the 10-minute interval ($P = 0.001$), followed by 2% H_2O_2 at the 5-minute interval and propolis ($P = 0.001$). Concerning propolis ($P = 0.001$) and 2% H_2O_2 ($P = 0.004$), the effect of exposure time was significant. **Conclusion:** All the disinfecting agents in the present study can be used to disinfect impressions contaminated with *C. albicans*; however, concerning propolis, although it resulted in significant decreases in *C. albicans* colony counts, the elimination of the remaining colonies was ineffective.

Keywords: *Candida albicans*, disinfection, hydrogen peroxide, propolis, sodium hypochlorite

Introduction

There is a risk of transmission of pathogenic microorganisms to dental laboratories through impressions. Several disinfecting agents have been introduced for disinfection of impressions, some of which are chemicals, which might affect some essential properties of impressions, including their dimensional stability. Recently, attempts have been made to use new methods and materials, such as hydrogen peroxide, ozone,[1] microwave radiation,[2,3] and propolis, in dental procedures to eliminate microorganisms.

Propolis or bee glue is a resinous mixture that honey bees produce by mixing saliva and beeswax with exudate gathered from tree buds snap flows or botanical sources. It is used as a sealant for unwanted open space in beehive, reduces microbes, and waterproofs the hive.[4]

At present, the antimicrobial effects of propolis have been established. In this context, Arslan *et al*. evaluated the antimicrobial effects of propolis, BioPure MTAD (Dentsply Sirona, USA), 5.25% NaOCl, and 2% chlorhexidine on *Enterococcus faecalis* and *Candida albicans*.[5] The results showed that the antimicrobial effect of propolis on fungal species. Therefore, propolis has been used in various dental procedures, such as endodontics, preventive dentistry, periodontics,

Address for correspondence: Shima Aalaei, Dental Caries Prevention Research Center, Qazvin University of Medical Sciences, Bahonar Blvd, Qazvin, Iran.
E-mail: sh.aalayie@yahoo.com

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